



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,598	02/15/2001	Kiyokazu Moriizumi	010153	4350

23850 7590 10/04/2002

ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW.
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

DINH, TUAN T

ART UNIT PAPER NUMBER

2827

DATE MAILED: 10/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/783,598

Applicant(s)

MORIIZUMI, KIYOKAZU

Examiner

Tuan T Dinh

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 7-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 4-5 are objected to because of the following informalities:

Claim 4, lines 2-3, please change "wherein a pad" to --further comprising a pad--.

Claim 5, lines 2-3, please change "wherein a thin film" to --further comprising a thin film--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, lines 3-7, it is unclear. The phrase of "a plurality of posts...that can be anisotropically etched and having an electrically conductive portion...with each other" is not understood. What does applicant meant of "a plurality of posts...having an electrically conductive portion?" Does applicant meant "each of the plurality of posts having an electrically conductive portion?"

Regarding claim 1, line 4, it is unclear. The phrase of "...that can be anisotropically etched..." is not positive claim.

Regarding claim 1, line 8, it is confuse. Does applicant mean of "an insulative substrate" is a part which is different from a front and back electrically conductive substrate or the front and back...substrate made of insulation?"

Regarding claim 6, lines 3-7, it is unclear. The phrase of "the insulation material...that absorbs a difference in a CTE..." is not understood.

4. Claim 6 recites the limitation "mounted semiconductor components" in lines 6-7. There is improper antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen et al. (U. S. Patent 3,571,923) in view of Hawkins et al. (U. S. Patent 6,258,286).

As best understood to claims 1-6, Shaheen discloses a front-and-back electrically conductive substrate having an insulation material (1, column 2, line 3, column 3, line 17) as shown in figures 1-7 comprising:

solid interconnections (7, 8, and 11-14, column 2, lines 13-14, and 33-34) capable of being a plurality of posts composed of a material (copper or copper alloy) that can be etched and each having an electrically conductive portion (copper plating)

Art Unit: 2827

that has at least first and second surfaces (21-see figure 7) that communicate with each other; and the insulative substrate (1) that supports the plurality of posts (7, 8).

Shaheen does not disclose an anisotropically etched process. Hawkins shows an anisotropically etched process (column 4, lines 32-33) disclosed in figures 1-8.

It would have been to one of ordinary skill in the art at the time the invention was made to have an anisotropically etched as taught by Hawkins to employ the etching process of Shaheen for purpose of providing through holes aligned with bore liners, and also removing cavity masks in the through holes.

As to claim 2, Shaheen discloses the substrate (1) as shown in figure 8 wherein the electrically conductive portion comprises an electrically conductive film (21-see figure 8) covering a front surface of the posts.

As to claim 3, Shaheen discloses the substrate as shown in figures 1-8 wherein: the insulative substrate is composed of either ceramic, glass or an organic resin (column 3, line 17); and the electrically conductive portion is a metal (copper plating) having a melting temperature higher than either a baking temperature or a melting temperature of an insulation used in the insulative substrate.

As to claim 4, Shaheen discloses the substrate as shown in figures 1-8 further comprising a pad (column 2, lines 59-75) for mounting a semiconductor component is formed on at least the first surface of the front and-back electrically conductive substrate.

As to claim 5, Don discloses the substrate as shown in figures 1-8 further comprising a thin film composed of a wiring pattern layer (layers 17, 18) and an

insulation layer is formed on at least the first surface of the front-and-back electrically conductive substrate.

Response to Arguments

7. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sullivan, Watanabe et al., and Swamy disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-1341 for regular communications and 703-305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Application/Control Number: 09/783,598
Art Unit: 2827

Page 6

TD
September 18, 2002



KAMAND CUNEO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800